



# Technische Unterlage

Best.-Nr.

**QUELLE.**

119.956 1  
521.937 3

## Schaltbild Platinenabbildung Abgleichanweisung

***Chassis: E 10***

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**universum.**

**FT 42230**

ET.-Nr

VI/2003

# CHASSIS E10

## *SERVICE MANUAL*

	Page
• TECHNICAL SPECIFICATIONS TV SETS WITS CHASSIS E10.....	2
• GENERAL INSTRUCTIONS.....	4
X-RAY RADIATION.....	4
SAFETY.....	4
MEASUREMENT CONDITIONS.....	4
• MAIN CHASSIS, COMPONENT SIDE – SUPPLY VOLTAGES.....	6
• SERVICE ADJUSTMENTS OF THE COLOUR TV WITH E10 CHASSIS.....	7
• LIST OF SERVICE PARAMETERS (SERVICE MODE).....	11
• ELECTRICAL DIAGRAM OF MAIN CHASSIS E10.....	12
• ELECTRICAL DIAGRAM OF MODULE FBOX FOR CHASSIS E10.....	13
• ELECTRICAL DIAGRAM OF MODULES FOR CHASSIS E10.....	14
• COMPONENT LOCATIONS ON MAIN CHASSIS E10 – COMPONENT SIDE.....	15
• COMPONENT LOCATIONS ON SEPARATE MODULES OF CHASSIS E10.....	16
• MECHANISCHE TEILE FT42230 70cm 521.937-3.....	20
• LIST OF RECOMMENDED SPARE PARTS FOR CHASSIS AND MODULES E10....	21

**E10 CHASSIS - TECHNICAL SPECIFICATION – Rev.1.0**

		<b>OPTION</b>
<b>1. SCREEN SIZE:</b>	<ul style="list-style-type: none"> <li>• 25", 28", 34"- 4:3</li> <li>• 28", 32" - 16:9</li> </ul>	<ul style="list-style-type: none"> <li>• Real flat: 29" – 4:3 , 28" and 32" – 16:9</li> </ul>
<b>2. AVAILABLE STANDARDS:</b>	<p>MULTISTANDARD</p> <ul style="list-style-type: none"> <li>• PAL: BG, DK, I, M</li> <li>• SECAM: BG, DK, LL'</li> <li>• NTSC via SCART</li> </ul>	
<b>3. TUNER:</b>	HYPERBAND: VHF C2-C12, UHF C21-C69, S1-S41	2-nd PIP tuner
<b>4. FEATURES:</b>	<ul style="list-style-type: none"> <li>• Frequency synthesis (125KHz adjustment step)</li> <li>• Multi language MENU OSD system</li> <li>• Automatic tuning and sorting system ATS at firs switching</li> <li>• P 8/30 processing</li> <li>• Manual ( four letter ) naming menu</li> <li>• Manual program search</li> <li>• Direct input of channel number</li> <li>• Manual menu organization (insert, delete, name, skip, swap functions for several program)</li> <li>• Personal ZOOM modes</li> <li>• Automatic format recognition WSS and adoption (16:9)</li> <li>• 100 programs memory</li> <li>• Picture adjustment: contrast, colour saturation, brightness, sharpness</li> <li>• Sound adjustment: volume, balance, equalizer</li> <li>• Remote control (RC5 code)</li> <li>• Automatic switch-off</li> <li>• Switch off timer 0 - 120 min.</li> <li>• Child lock</li> </ul>	<ul style="list-style-type: none"> <li>• Hotel mode (volume lock, tuning lock)</li> </ul>
<b>5. SOUND:</b>	<ul style="list-style-type: none"> <li>• Digital sound processing</li> <li>• MONO/STEREO/DUAL sound decoding</li> <li>• AM sound</li> <li>• 5 channel graphic equalizer with 6 pre adjusted sound characteristics</li> <li>• Mute</li> <li>• Output power 30W (15W L+15W R)</li> <li>• Space effect</li> <li>• Super bass</li> <li>• AVL (automatic volume leveling)</li> </ul>	<ul style="list-style-type: none"> <li>• NICAM A2</li> <li>• Virtual Dolby reproduction,</li> <li>• 3D sound reproduction</li> <li>• Dolby Surround Pro-Logic</li> <li>• 2 additional tweeters</li> <li>• Build in active subwoofer 30W speaker</li> <li>• Separate headphone volume adjustment</li> </ul>
<b>6. TELETEXT:</b>	<ul style="list-style-type: none"> <li>• Multi page (min. 124) TTX processing</li> <li>• Pan europeian character set,</li> </ul>	<ul style="list-style-type: none"> <li>• FLOF</li> <li>• TOP</li> <li>• 500 pages memory</li> <li>• EPG</li> </ul>

<b>7. CONNECTIONS:</b>	<ul style="list-style-type: none"> <li>• SCART 1 AV: CVBS, SVHS, RGB</li> <li>• SCART 2: CVBS,</li> <li>• Antenna 75 ohm</li> </ul>	<ul style="list-style-type: none"> <li>• Headphone</li> <li>• AV cinch input (video + audio)</li> <li>• MINI DIN SVHS input</li> <li>• Cr, Cb, Y inputs</li> <li>• VGA input</li> <li>• Cinch audio output</li> <li>• SCART 3</li> <li>• External speakers</li> </ul>
<b>8. ADDITIONAL OPTIONS</b>	<ul style="list-style-type: none"> <li>• PIP with 2-nd tuner</li> <li>• Multi-PIP with tuner scanning</li> <li>• Split screen -"double window" (16:9)</li> <li>• Standby power consumption &lt;5W</li> <li>• Power factor correction</li> <li>• Dynamic focus</li> <li>• Scan velocity</li> </ul>	<ul style="list-style-type: none"> <li>• Feature connector for additional options: DVB module, SAT module, picture improvements...)</li> <li>• VGA signal reproduction up to 38 kHz</li> </ul>
<b>9. VIDEO:</b>	<ul style="list-style-type: none"> <li>• Analog HF and IF processing</li> <li>• A-D conversion and digital up-conversion from 50 Hz to 100Hz</li> <li>• Digital processing</li> <li>• 4:2:2 digital technology with high color resolution</li> <li>• Black and Blue stretch,</li> <li>• Blue background color</li> <li>• ZOOM (4:3)</li> <li>• ZOOM (16:9)</li> <li>• Freeze</li> <li>• Tuner scan</li> <li>• DTI - digital transients improvements</li> <li>• 4 - line comb filter</li> <li>• Dynamic peaking function</li> <li>• 3-D noise reduction</li> <li>• Vertical interpolation</li> <li>• Switch ON/OFF effect</li> <li>• Progressive scan system</li> </ul>	<ul style="list-style-type: none"> <li>• Line flicker reduction</li> <li>• 4/12/16 multi-picture and tuner scanning (1 live picture and 3/15 freeze)</li> </ul>
<b>10. SUPPLY:</b>	<ul style="list-style-type: none"> <li>• Power consumption: 170W</li> <li>• AC supply voltage: 170-250VAC±10%</li> <li>• Standby consumption: 5W</li> </ul>	<ul style="list-style-type: none"> <li>• AC supply voltage: 90-270VAC</li> <li>• PFC circuit</li> <li>• Standby consumption: &lt;2W</li> </ul>

## GENERAL INSTRUCTIONS

### X-RAY RADIATION

Picture tube is potential source of X-radiation of colour TV. Use exclusively original types of replacement picture tubes, specified in technical documentation. Accelerating high voltage must not exceed 30 kV. Supply voltage "B+" for horizontal output stage must be set according to the specifications given in service manual.

### SAFETY INSTRUCTIONS

Service interventions on colour TV can be performed by authorised and qualified personnel only, considering the following instructions:

- During service interventions connect the TV set to mains voltage through separating (isolating) transformer.
- During servicing procedures (replacement of individual components) disconnect the cord from mains connector.
- After disconnection and before servicing wait about 30 sec. so that charged electrolytes and picture tube are discharged.
- Provide for additional discharge of picture tube when replacing it and use protective means to prevent injuries due to eventually broken glass.
- When changing modules or complete chassis, fix it with adequate elements (screws, latches, ...).
- Wires inside the TV set should not come in contact with sharp or hot areas.
- Integrated circuits and other semiconductors on chassis are sensitive to overvoltages and high temperatures.

During service interventions they should be protected against too long heating with soldering iron (5 sec.), electrostatic discharges, short circuits between connectors etc. Therefore the following general instructions should be followed:

- Use low impedance disconnecting transformer for connection of chassis to mains voltage.
- Use low voltage soldering irons with protective earthing.
- Chassis earthing should be equal to earthing of measuring and calibrating equipment and tools.
- When connecting instruments, first connect negative connector (mass, earth) and afterwards signal connector.
- Voltages to be checked should be measured with suitable instruments. Do not use "short-circuit methods" with pincers or screwdriver.
- Conductors under high voltage should not be placed near semiconductors on chassis.
- Installed IC's, transistors and MOSFET's are made in various semiconductor technologies (CMOS, MOS, BIMOS or bipolar technology) and are more or less sensitive to exterior effects during handling. All these elements should be handled in accordance with the requirements for electrostatic protection. If these requirements are fulfilled, you prevent formation of undesired electrostatic discharges which can destruct semiconductors or can activate destructive mechanisms, which destroy circuit during operation.

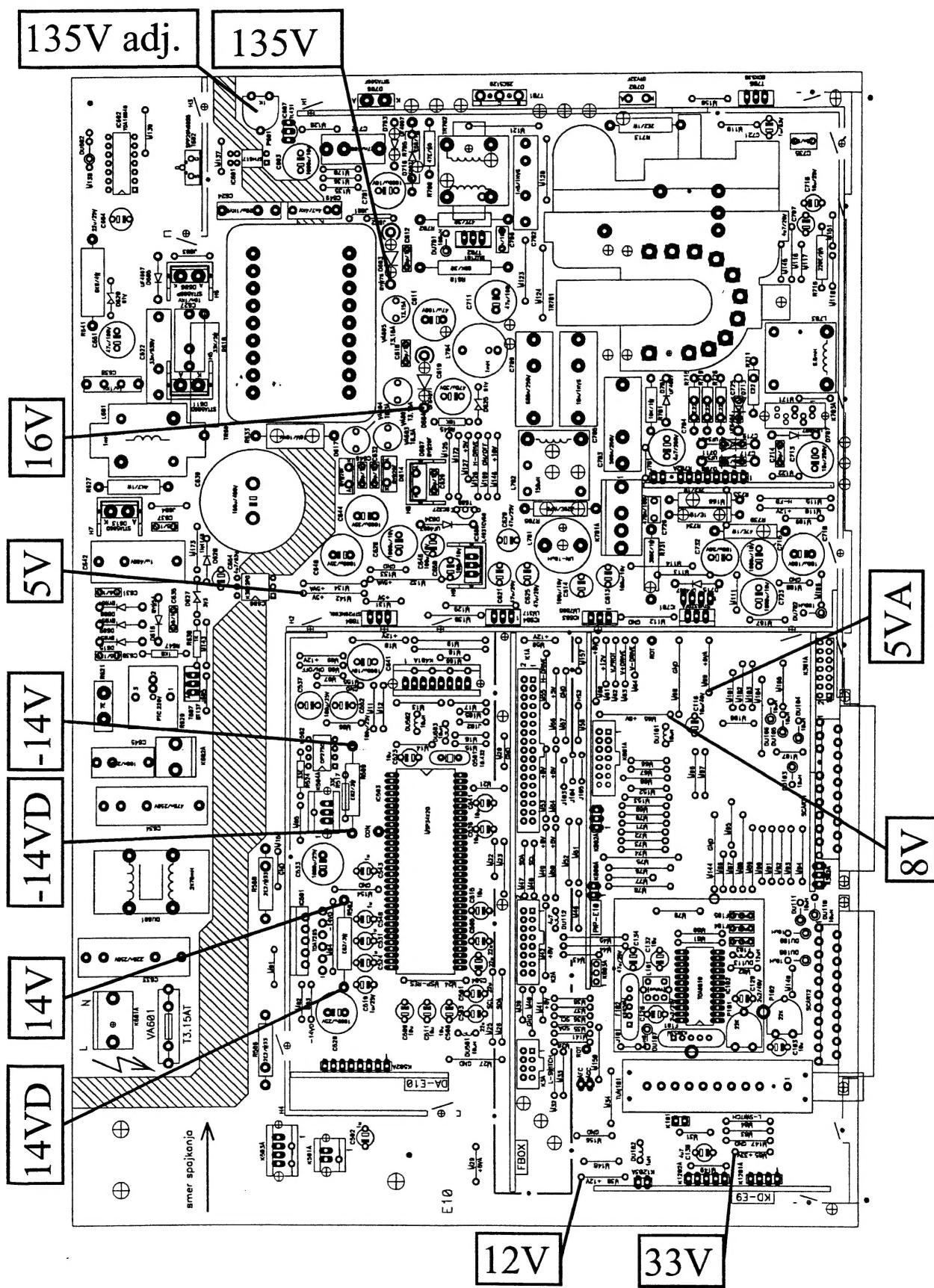
Accumulated electrostatic charge is discharged through individual connectors of IC or transistor during electrostatic discharges and current runs through semiconductor structure. Considering that thickness of semiconductor substrate, used for IC, are very small, this current can cause damages to IC or destroy it. For the protection of circuits the currents originating from discharges should be discharged under control. This is obtained in the following ways:

- Staff handling the ICs should have earthed hands by means of a suitable wire and resistor.
- Working table should as well be earthed. Working surface should be made of conducting material (conducting rubber), soldering irons and all required equipment should be earthed.
- Carrying and storing is permissible only in original packaging (antistatic tubes, conducting sponges).
- If IC is mounted on a base, it should not be replaced under voltage.

## MEASUREMENT CONDITIONS

- HF input signal in antenna: 1mV, with "Philips" test signal
- Input video signal on SCART connector: 1 Vpp
- Input audio signal on SCART connector: 500 mVeff
- Brightness, contrast and colour of picture, volume of sound set to normal (near middle of scale)
- Measure DC voltages with digital voltmeter with 1% precision
- Measuring instrument (voltmeter or oscilloscope) connect to tuner ground during measuring on secondary side of mains (SMPS) transformer and on primary side during measuring on primary side SMPS supply circuit.

## MAIN CHASSIS, COMPONENT SIDE – SUPPLY VOLTAGES



## SERVICE ADJUSTMENTS OF THE COLOUR TV WITH E10 CHASSIS

All necessary adjustments and settings are performed during manufacture of TV set and assure its correct operation when connected to the mains voltage and antenna or external video or audio signal. When TV set requires service intervention all settings should be checked and corrected, if necessary.

### DEMAGNETISING OF PICTURE TUBE

Correctness of picture tube demagnetising is usually automatically checked. Magnetisation of picture tube is presented as one or more colour "clouds", consequently colour reproduction of the picture is not correct.

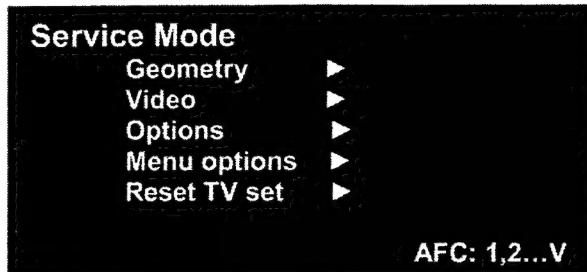
Each time the TV set is switched on with mains switch, demagnetising system is activated. For correct demagnetising procedure disconnect the TV set with mains switch and leave it disconnected for about 15 minutes. Afterwards when you switch on the TV, demagnetising procedure is performed. In case distortion of colour reproduction still persists, special demagnetising coil should be used.

<b>ADJUSTMENT</b>	<b>ADJUSTMENT CONDITION</b>	<b>ADJUSTMENT ACTIVITY AND RESULT OF SETTINGS</b>
<b>1. SUPPLY VOLTAGE FOR HORIZONTAL OUTPUT STAGE »B+«</b>	<ul style="list-style-type: none"> <li>• Connect the TV set to supply voltage 175...250VAC.</li> <li>• Switch it on and set it by means of remote controller to AV mode of operation.</li> <li>• Connect DC voltmeter to D-603 cathode.</li> </ul>	With <b>P-601</b> potentiometer set supply voltage for horizontal output stage to: <ul style="list-style-type: none"> <li>• 28", 32": 135V <math>\pm 0,5</math>V</li> <li>• 29": 132V <math>\pm 0,5</math>V</li> </ul>
<b>2. REFERENCE OSCILLATING CIRCUIT OF DEMODULATOR L101</b>	<ul style="list-style-type: none"> <li>• To antenna connector of TV set, which is set to channel 12, connect VF <b>unmodulated</b> signal source of frequency 224,25 MHz (C12) with RF amplitude ca 70dB/uV (3mV/75E); or connect on IF output of tuner (pin 10 and 11) signal source of frequency 38,9MHz and 100mV amplitude.</li> <li>• Connect voltmeter DC, on C131 (pin 17 of IC102).</li> </ul> <p><b>OR:</b> access service mode (see page 8) and observe value AFC in lower right side of screen.</p>	<ul style="list-style-type: none"> <li>• Rotating the core of L101 coil to set 2,5V +/-0,1V on Volt-meter.</li> </ul> <p><b>OR:</b> Rotating the core of L101 coil to set 1,25V +/-0,05V on indicator of value AFC in lower right side of screen.</p>
<b>3. OPERATING THRESHOLD OF AUTOMATIC AMPLIFICATION REGULATION</b>	<ul style="list-style-type: none"> <li>• To antenna connector of TV set, which is set to channel 12, connect VF signal source of frequency 224,25 MHz (C12) with RF amplitude 62dB/uV (1,25mV/75E).</li> <li>• Connect voltmeter DC, on C102 (pin 1 of tuner).</li> </ul>	<ul style="list-style-type: none"> <li>• With rotating the potentiometer P101 set AGC on 3,5V +/-0,1V on Volt-meter.</li> </ul>

## SWITCHING TO SERVICE MODE

All other service settings of TV set are made in so called service mode of TV set operation. To enter this mode of operation press the keys in the following sequence: "TV", "I" and "STOP" in the period of 30 seconds from switching on the TV set to normal mode of operation. When the TV set is switched over to service mode the following display appears on the screen:

There is no need to manually store settings – each and every one settings is stored immediately after its change.



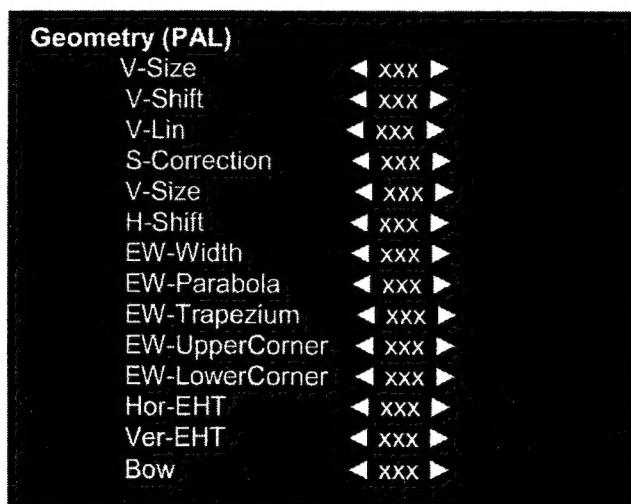
The next submenu is selected with keys  $\blacktriangleleft\triangleright$  (volume+/volume-), the parameter on submenu to be set is selected with keys  $\blacktriangleup\blacktriangledown$  (P+/P-) and selected parameter is set with keys  $\blacktriangleleft\triangleright$  (volume+/volume-). Each time you press the key for parameter value (keys  $\blacktriangleleft\triangleright$ ) the value of parameter is stored.

For exit menus are instructions on lower part of screen.

When setting is finished it should obligatory be concluded with "TV" key. After a few seconds the display disappears and service adjustment is accomplished.

NOTE: In case service adjustment is not ended in above specified mode (e.g. power supply breakdown), the adjustment can continue from ended position.

### Geometry (PAL) - [Values <xxx.:<+/-128>]:



Orientation values of parameters are on page 11

## Video

<b>Video</b>	
Red Drive	◀ XXX ▶
Blue Drive	◀ XXX ▶
Green Drive	◀ XXX ▶
Peak DriveLimit	◀ XX ▶
YC-Delay	◀ XX ▶
CTI Level	◀ XX ▶
OSD H-delay	◀ XXX ▶
OSD V-delay	◀ XXX ▶
OSD Gain	◀ X ▶
PIP vert. position	◀ XXX ▶
PIP hor. position	◀ XXX ▶
PIP offset position	◀ XX ▶
SVM Delay	◀ X ▶

Orientation values of parameters are on page 11

## Options

<b>Options</b>	
Tuner index	◀ X ▶
Picture tube 16:9	◀ Yes/ No ▶
UHF only	◀ Yes/ No ▶
Fast ATS (no L')	◀ Yes/ No ▶
Blue screen	◀ Yes/ No ▶
VGA input	◀ Yes/ No ▶
PIP Scan disable	◀ Yes/ No ▶
Curtain effect	◀ Yes/ No ▶
TOP enable	◀ Yes/ No ▶
FLOF enable	◀ Yes/ No ▶
Restore last state	◀ Yes/ No ▶

Orientation values of parameters are on page 11

## Menu options

<b>Menu options</b>	
Headphone option	◀ Yes/ No ▶
AV3	◀ X ▶
Subwoofer output	◀ Yes/ No ▶
Show volume bar	◀ Yes/ No ▶
Hide Item TILT	◀ Yes/ No ▶
Hide Item BLACKSTR	◀ Yes/ No ▶
Hide Item MENUCOLORS	◀ Yes/ No ▶
Noise selection	◀ Yes/ No ▶
Virtual Mode	◀ Yes/ No ▶
Twodigit entry	◀ Yes/ No ▶
Disabled languages	◀ XX ▶

Orientation values of parameters are on page 11

Tuner index:

- 0 – Panasonic ENV57D72G3 , Siel EL2787-84 , Thomson CTF5510
- 1 – Alps TEDE9X226A , Siel EL2882/104
- 2 – Siel EDL2782-74 , Temic 5002PH5-3x003
- 3 – Philips UV1316S/SIG-3
- 4 – Original "Cepac"

Virtual Mode:

- 0 – 3D sound
- 1- Dolby Virtual

SCART3:

- 0 – AV + SVHS
- 1 – AV
- 2 – No

Menu options (bit oriented, bits 0 .. 7, 1 .. ON/YES, 0 .. OFF/NO)

- 0 – DISABLE TILT ITEM
- 1 – DISABLE BLACKSTRETCH ITEM
- 2 - DISABLE COLORSET ITEM
- 3 – ENABLE FAST PROGRAM UP/DOWN

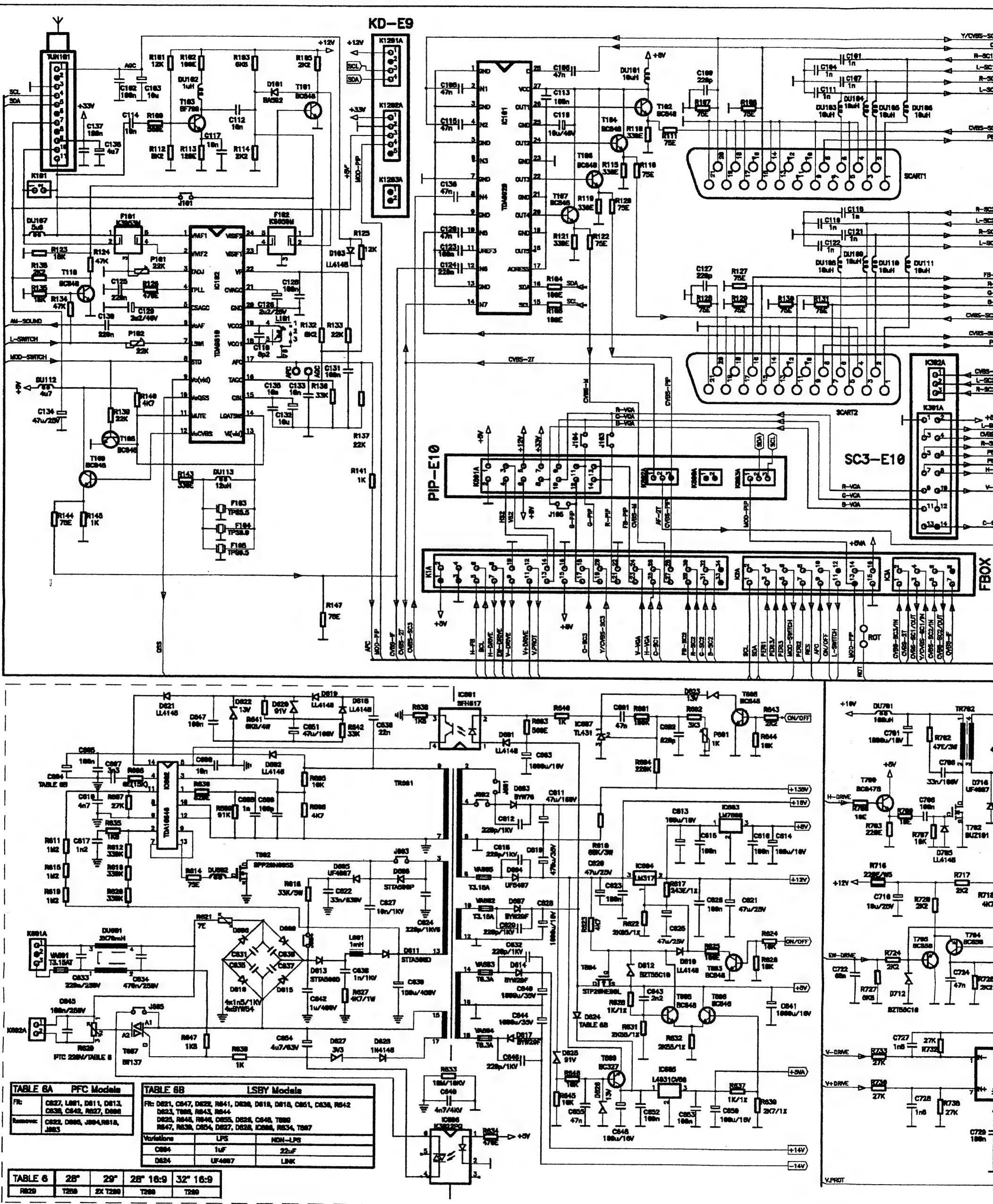
**Reset TV set**

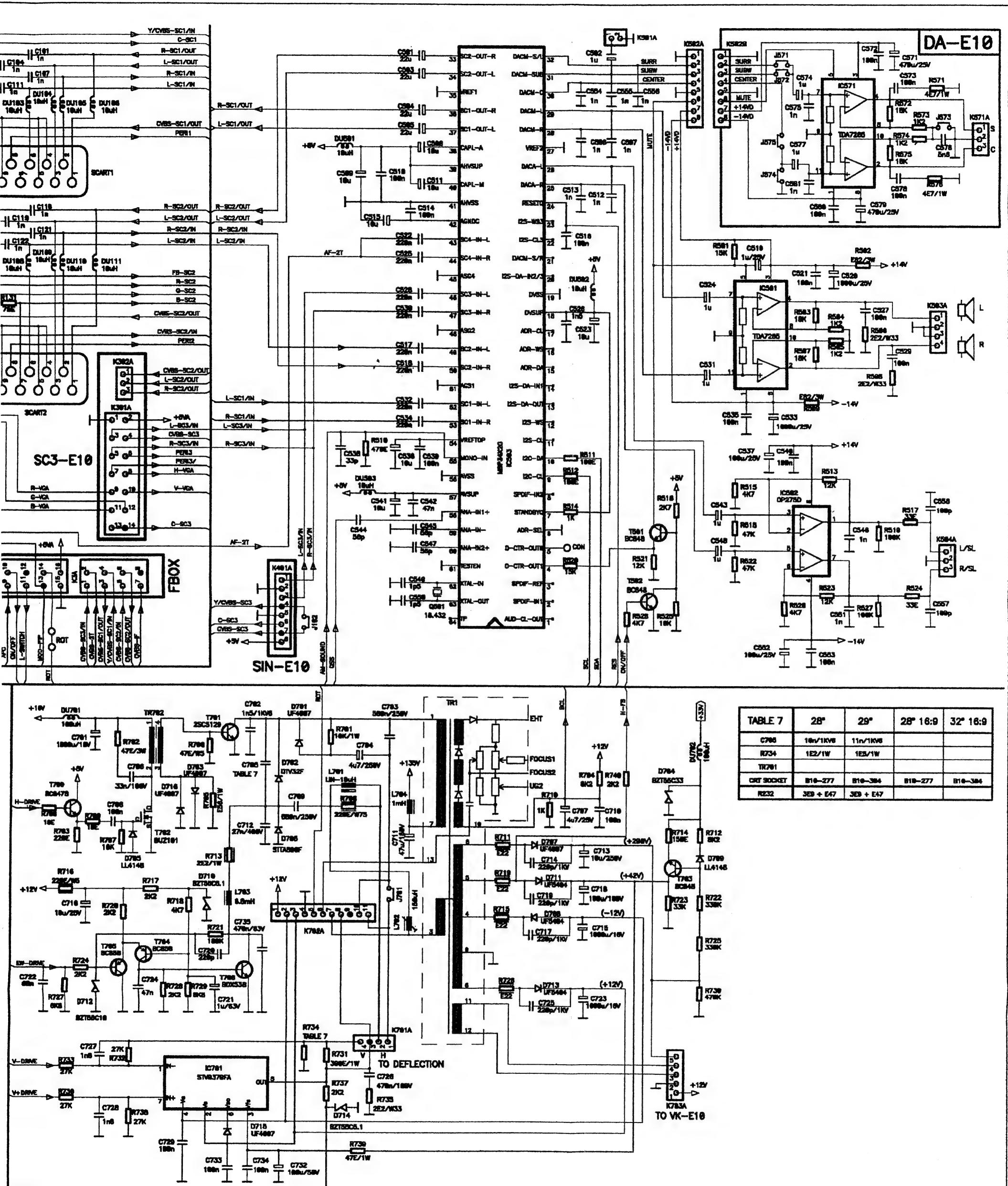
Fill all settings with factory values.

## LIST OF SERVICE PARAMETERS (SERVICE MODE)

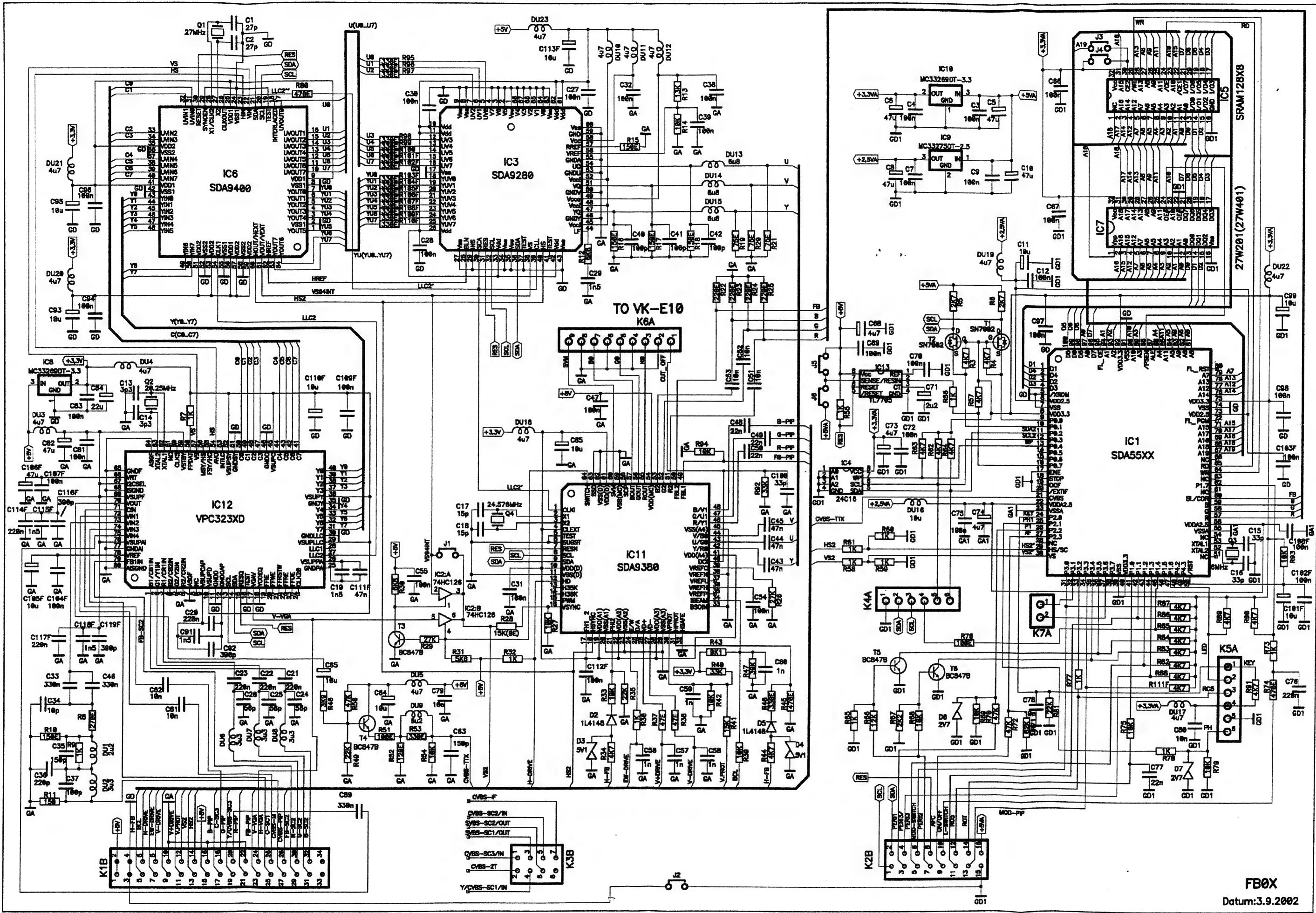
Servisní název	Nastavitev	Obseg	Předná stavitev	A66EAK 071X044	A68ERF 031X044	
<b>Geometry</b>	B+	UH [V]		135	132	
	V-Size	-128 to +127	40	+068	-056	
	V-Shift	-128 to +127	6	+012	-005	
	V-Lin	-128 to +127	45	-008	+006	
	S-Correction	-128 to +127	63	+015	-030	
	V-Size	-128 to +127	40	+068	-056	
	H-Shift	-128 to +127	38	-015	-011	
	EW-Width	-128 to +127	59	+049	+020	
	EW-Parabola	-128 to -127	85	-064	-026	
	EW-Trapezium	-128 to +127	-24	-010	-012	
	EW-Upper Corner	-128 to +127	61	+018	+016	
	EW-Lower Corner	-128 to +127	48	+038	+018	
	Hor. EHT	-128 to +127	0	-001	+127	
<b>Video</b>	Ver. EHT	-128 to +127	21	+000	+127	
	Bow	-128 to +127	21	-009	-012	
	Red Drive	-32 to +31	0	+010	+010	
	Blue Drive	-32 to +31	0	+000	+000	
	Green Drive	-32 to +31	0	-006	-006	
	Peak Drive Limit	-8 to +7	0	+002	+002	
	YC-Delay	0 to 15	11	+006	+006	
	CTI Level	0 to 15	9	+009	+009	
	OSD H-Delay	0 to 255	127	+143	+137	
	OSD V-Delay	0 to 255	44	+044	+044	
	OSD Gain	0 to 3	1	+001	+001	
	Pip vert. position	0 to 255	20	+025	+026	
	Pip hor. position	0 to 255	37	+031	+032	
<b>M.P.C.D.</b>	Pip offset position	-8 to +7	0	+006	+006	
	SVM Delay	0 to 4	0	+000	+000	
	Tuner index	0 to 4	2			
	Picture tube 16:9	Yes/No	No			
	UHF only	Yes/No	No			
	Fast ATS (no L1)	Yes/No	No			
	Blue Screen	Yes/No	Yes			
	VGA input	Yes/No	No			
	Pip scan disable	Yes/No	No			
	Curtain effect	Yes/No	No			
	TOP enable	Yes/No	No			
	FLOF enable	Yes/No	Yes			
	Restore last state	Yes/No	No			
<b>Options</b>	Headphone option	Yes/No	Yes			
	AV 3	0 to 2	0			
	Subwoofer output	Yes/No	No			
	Show volume bar	Yes/No	Yes			
	Hide item TILT	Yes/No	Yes			
	Item Blackstretch	Yes/No	No			
	Item Menucolors	Yes/No	No			
	Noise selection	Yes/No	No			
	Virtual Mode	Yes/No	Yes			
	Two-digit entry	Yes/No	Yes			
	Disabled languages	00 to ff	0			

## **ELECTRICAL DIAGRAM OF MAIN CHASSIS E10**





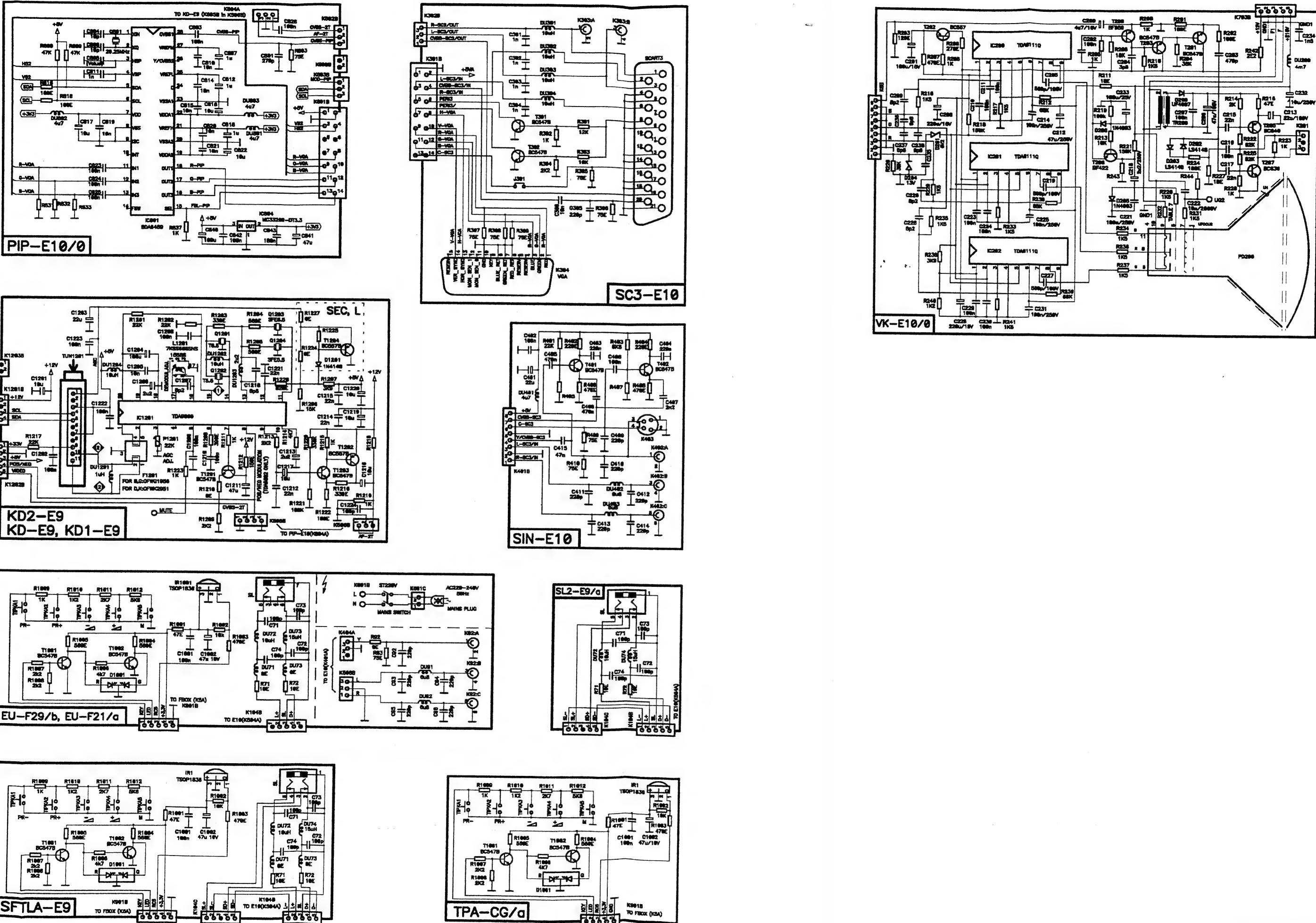
## **ELECTRICAL DIAGRAM OF MODULE FBOX FOR CHASSIS E10**



FB0X

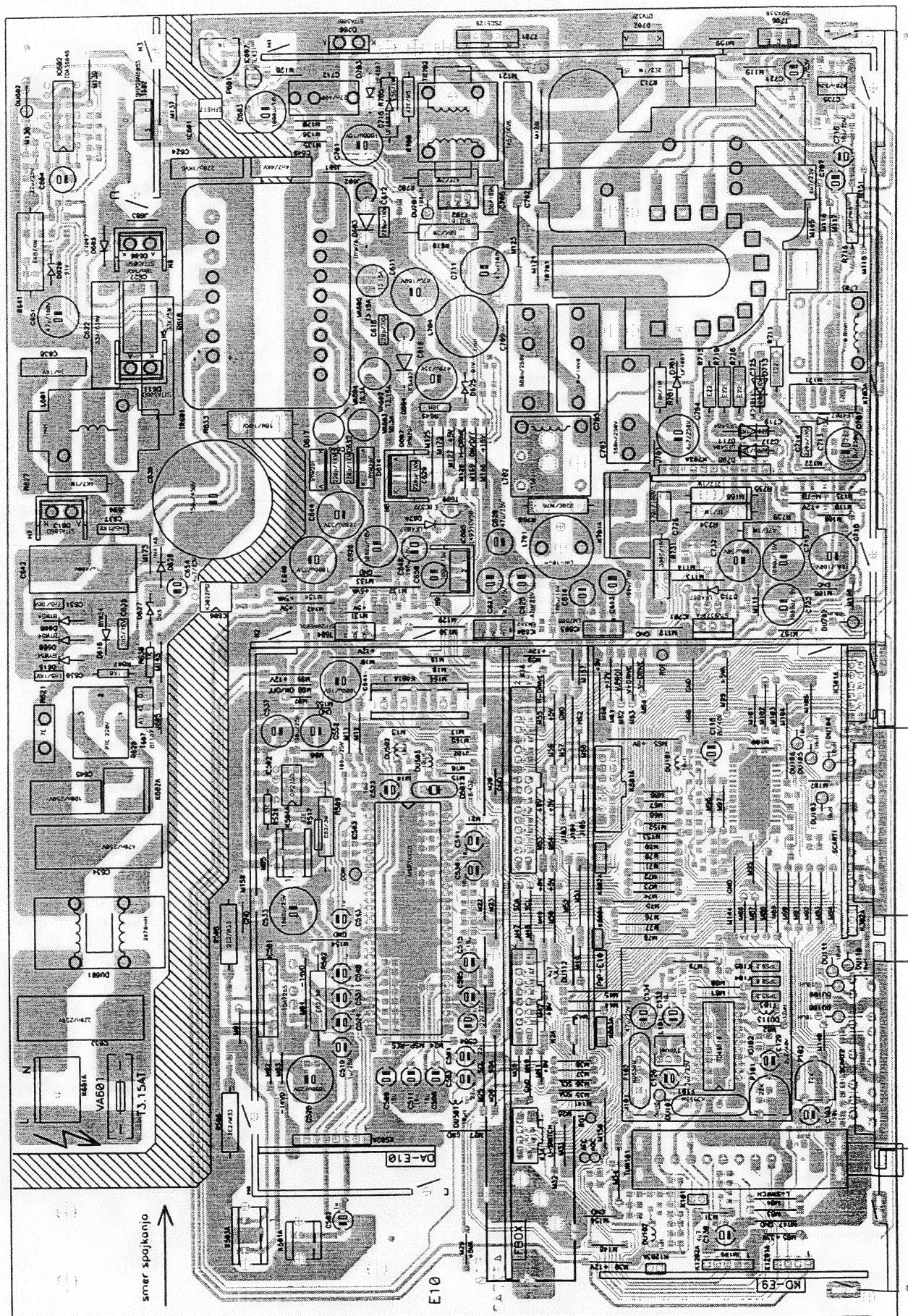
Datum:3.9.2002

## ELECTRICAL DIAGRAM OF MODULES FOR CHASSIS E10



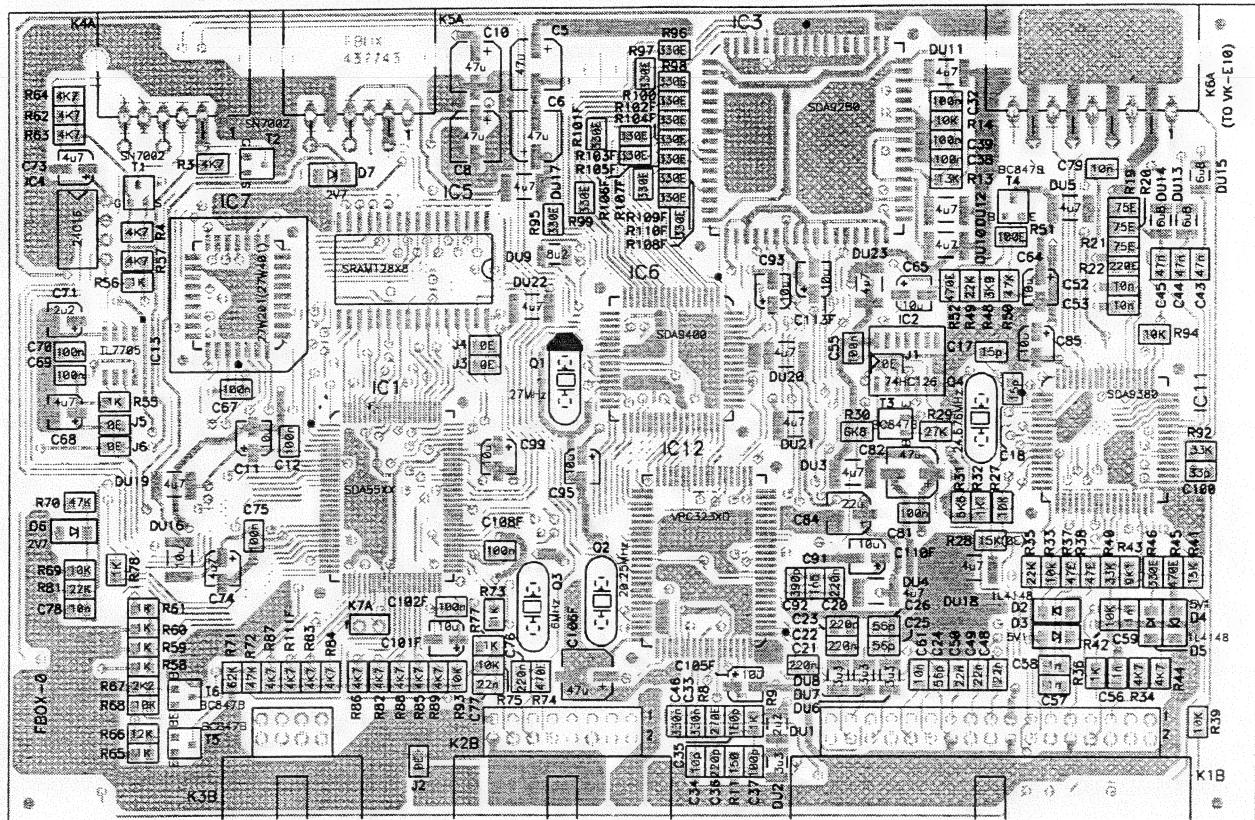
DATUM: 12.9.2002

## COMPONENT LOCATIONS ON MAIN CHASSIS E10 – COMPONENT SIDE

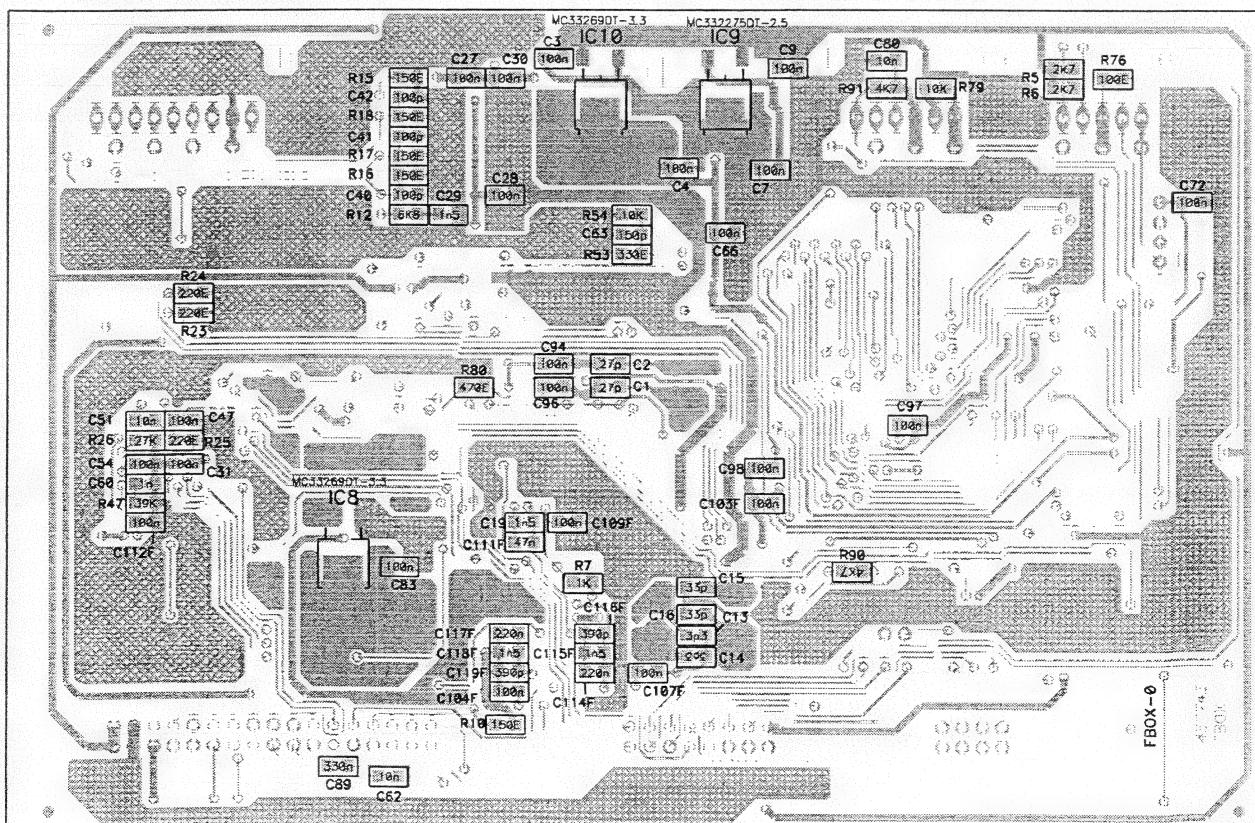


## **COMPONENT LOCATIONS ON SEPARATE MODULES OF CHASSIS E10 COMPONENT SIDE**

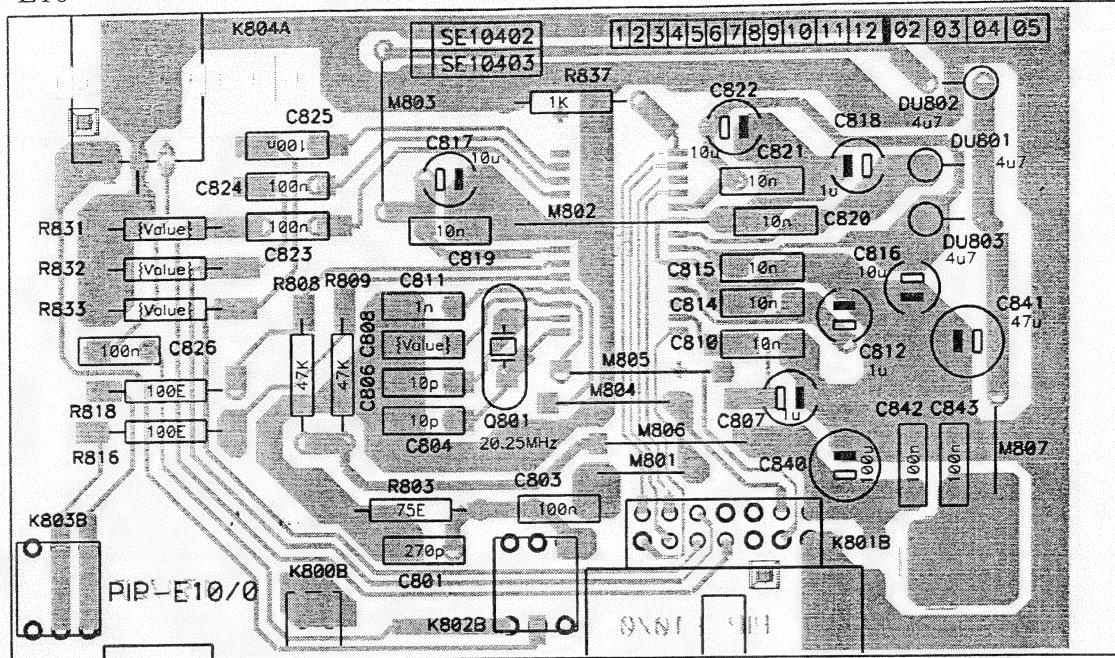
## FBOX – top side



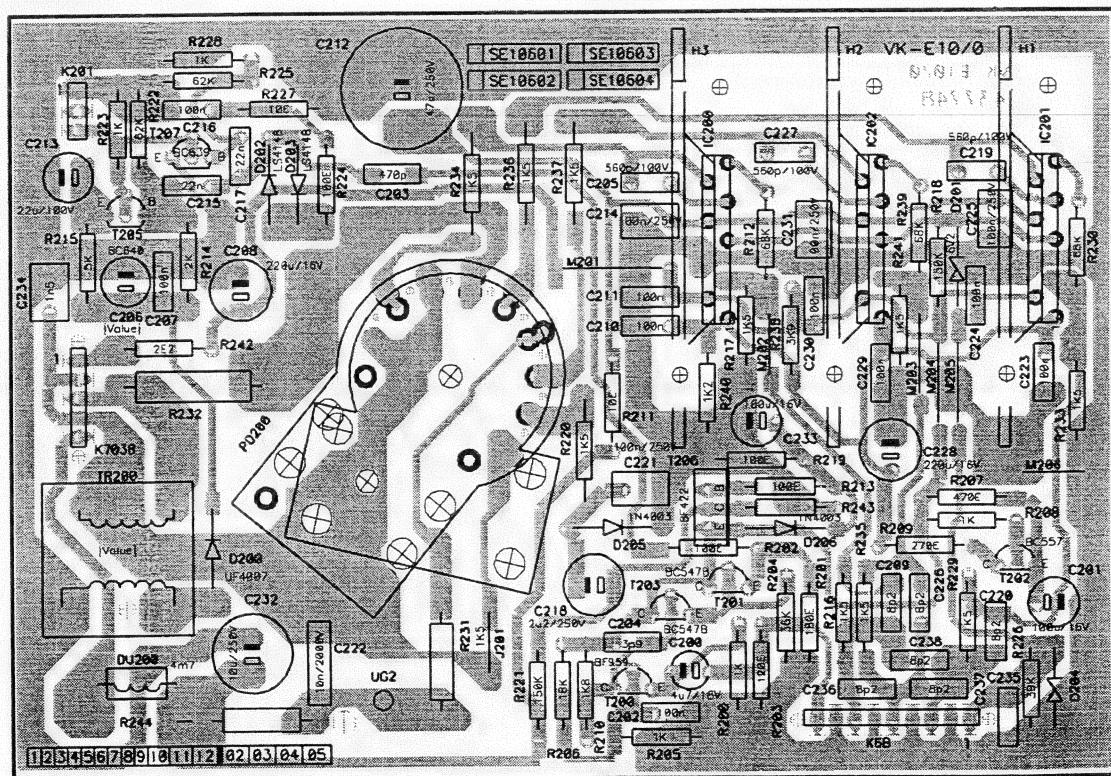
FBOX - bottom side



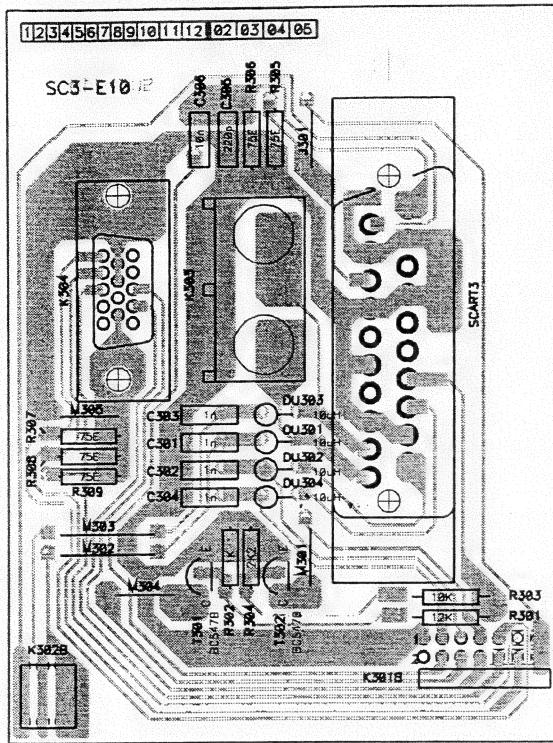
PIP-E10



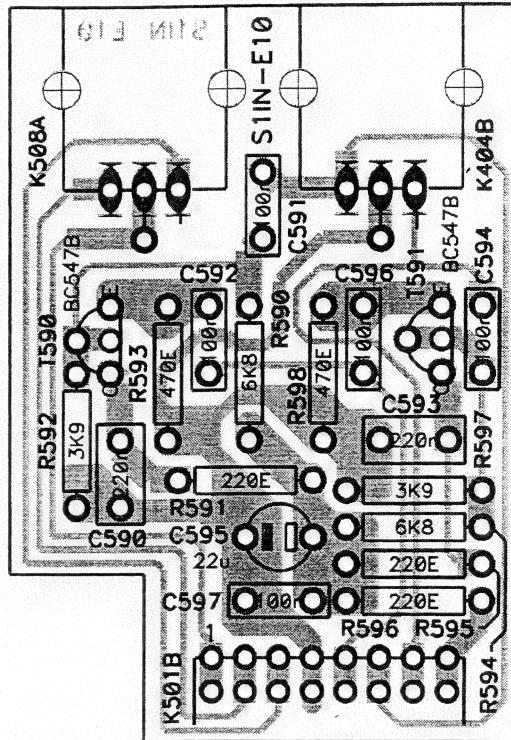
VK-E10



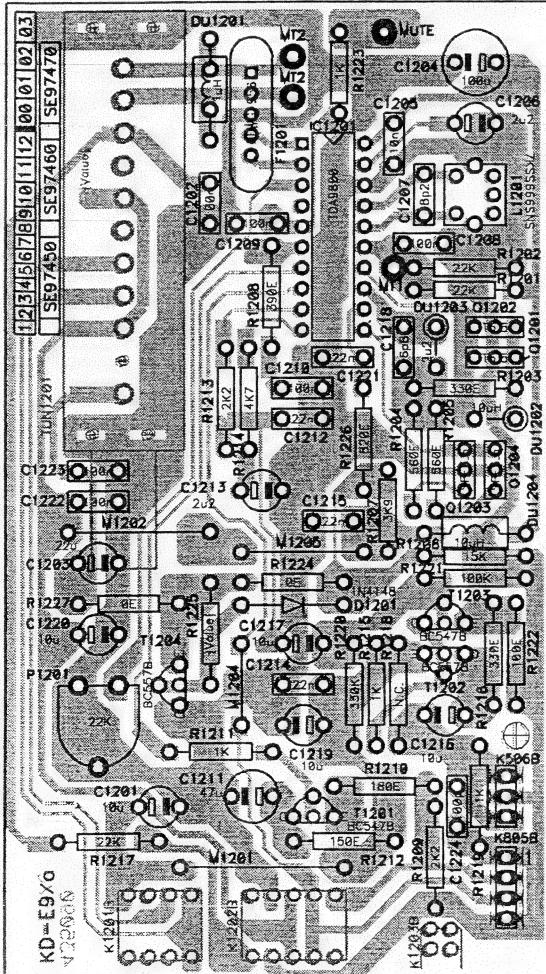
SC3-E10



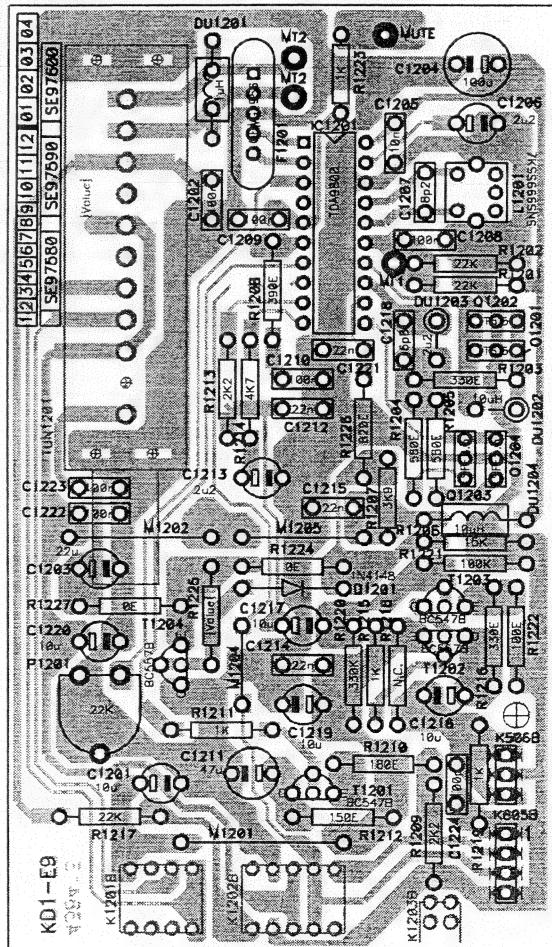
S1IN-E10



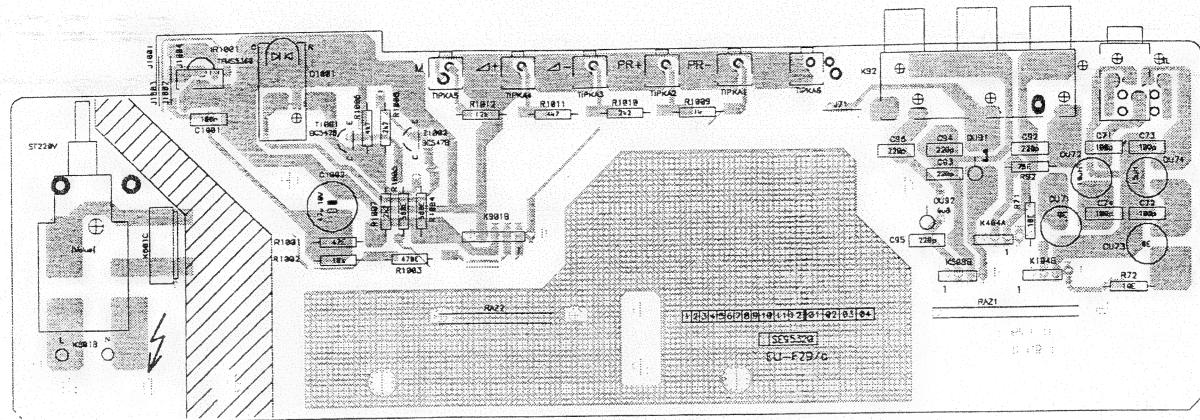
KD-E9



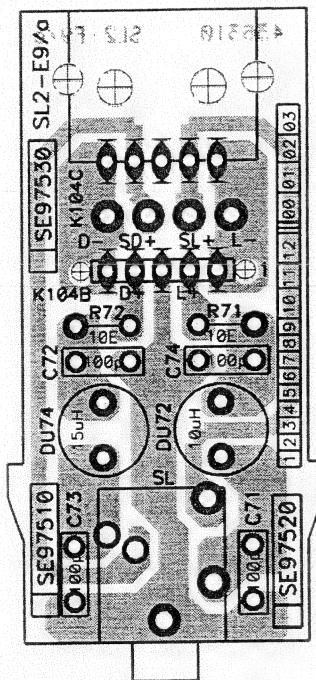
KD1-E9



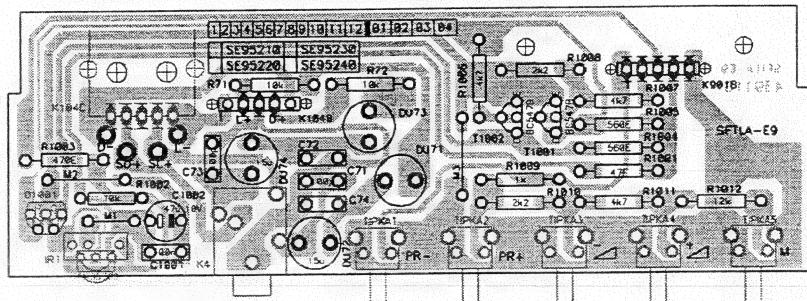
EU-F29



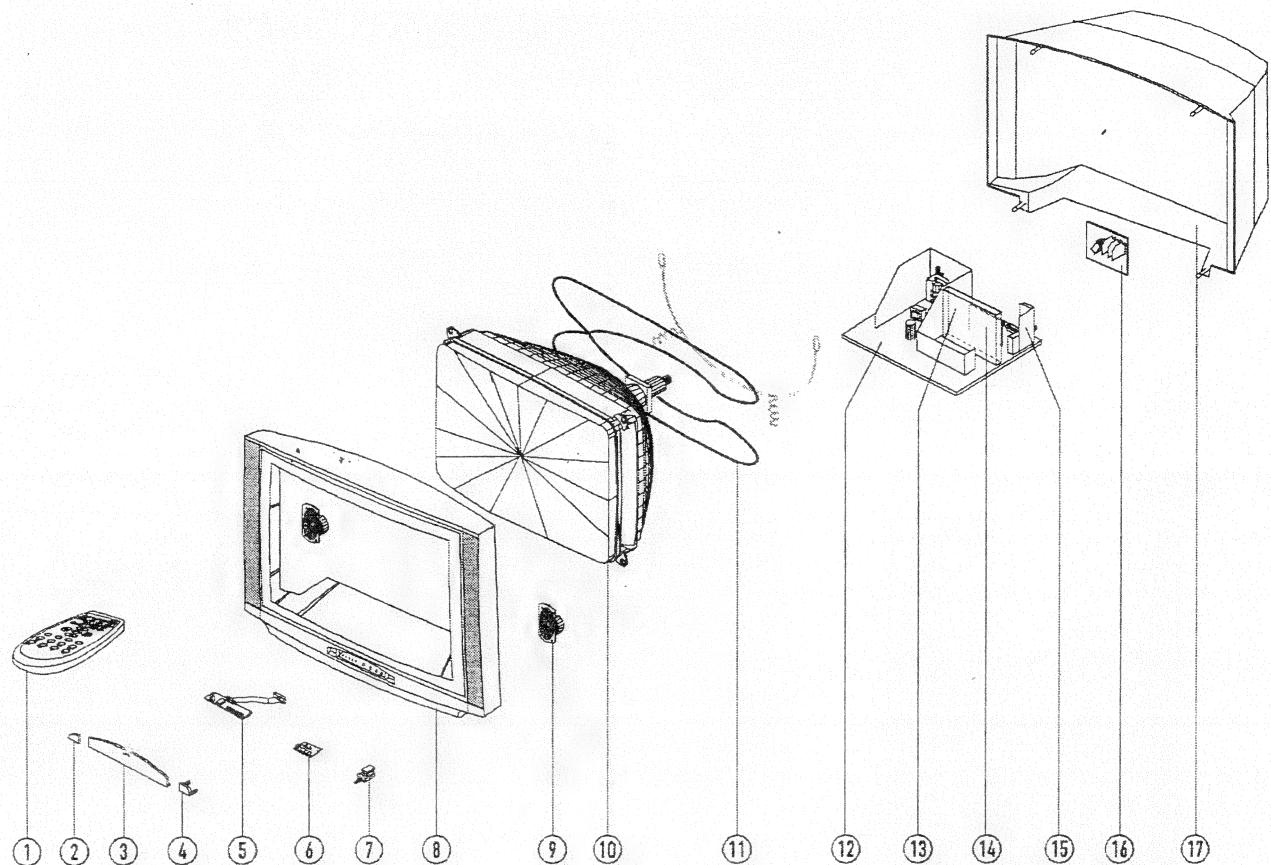
SL2-E9



SFTLA-E9

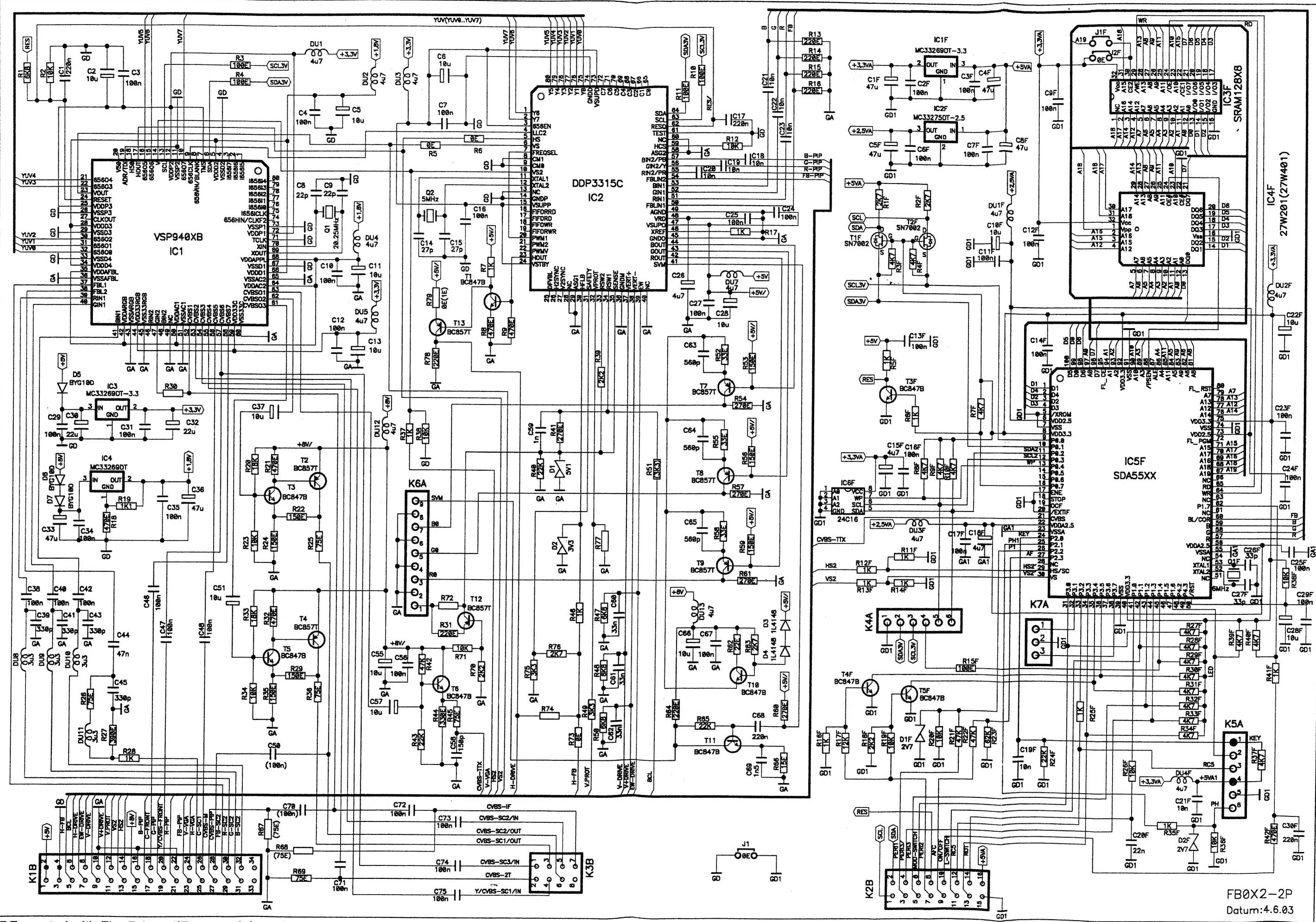


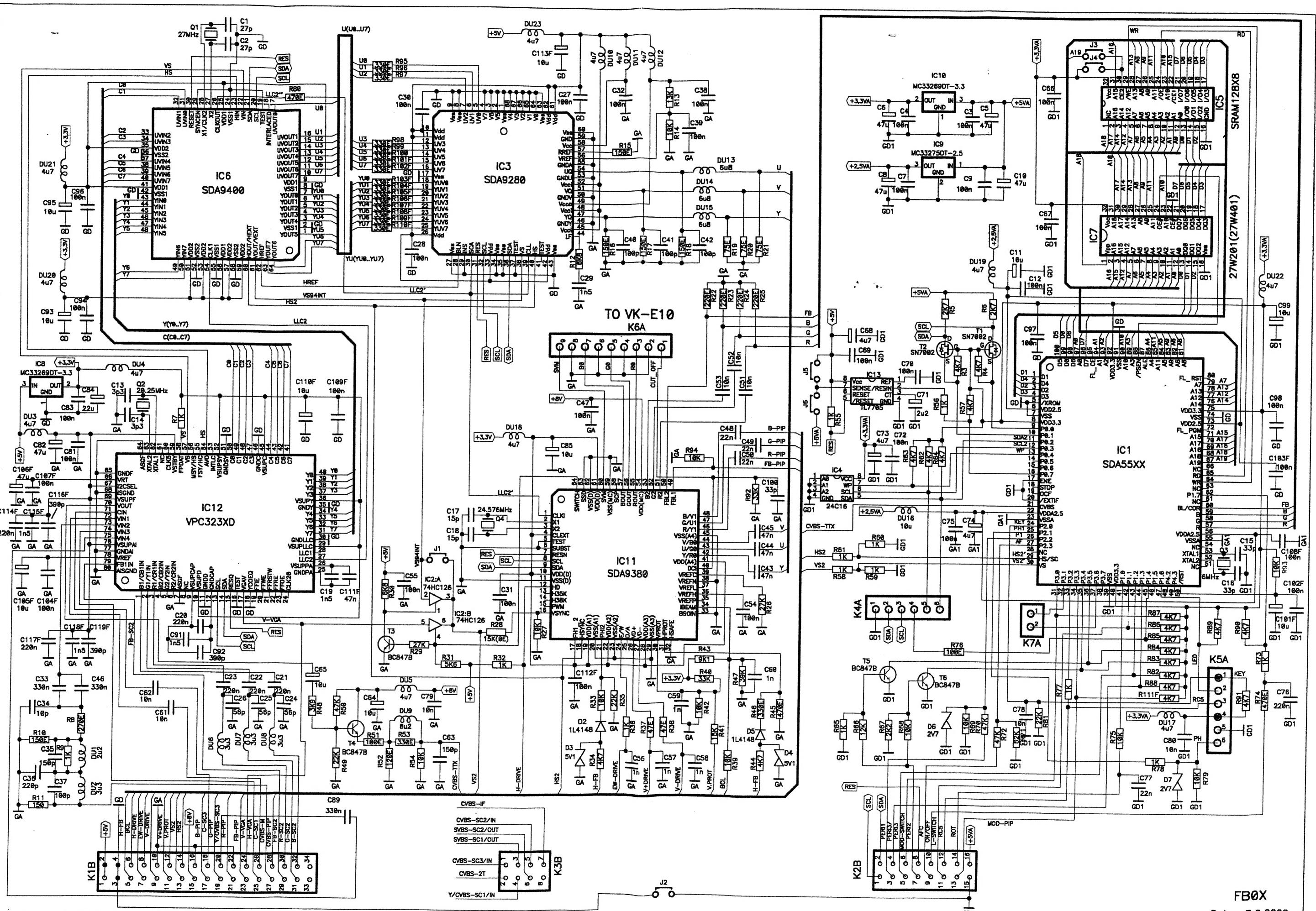
## MECHANISCHE TEILE FT42230 70cm 521.937-3

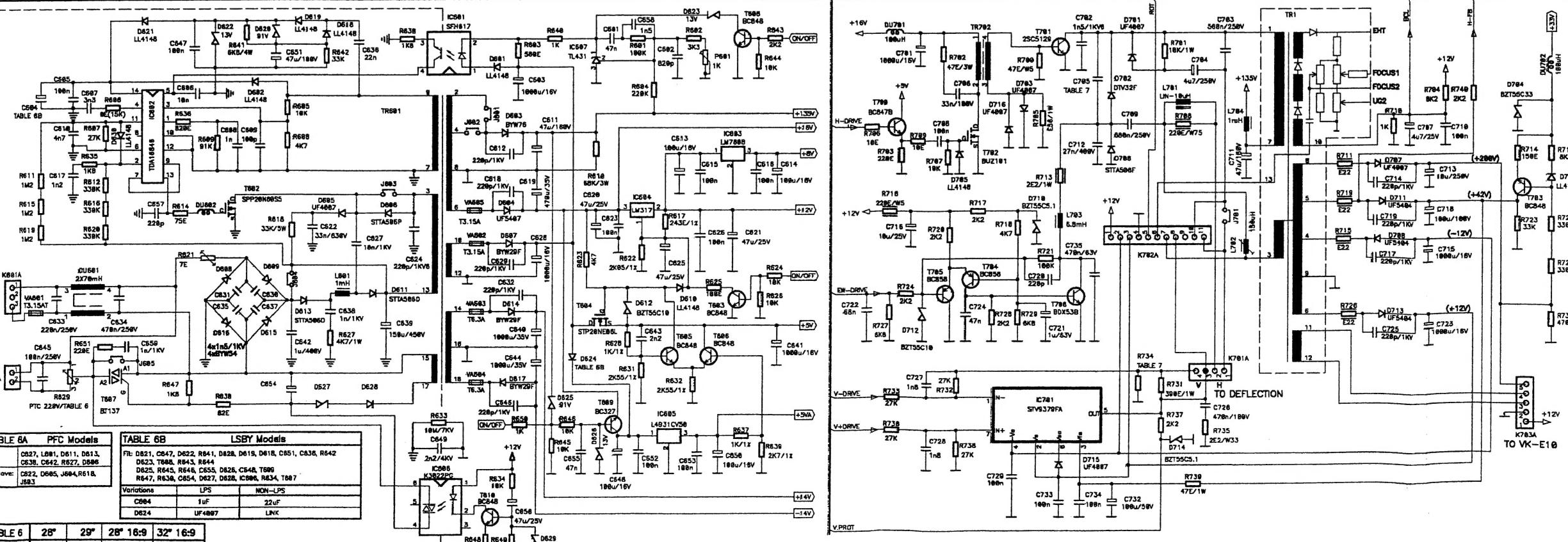
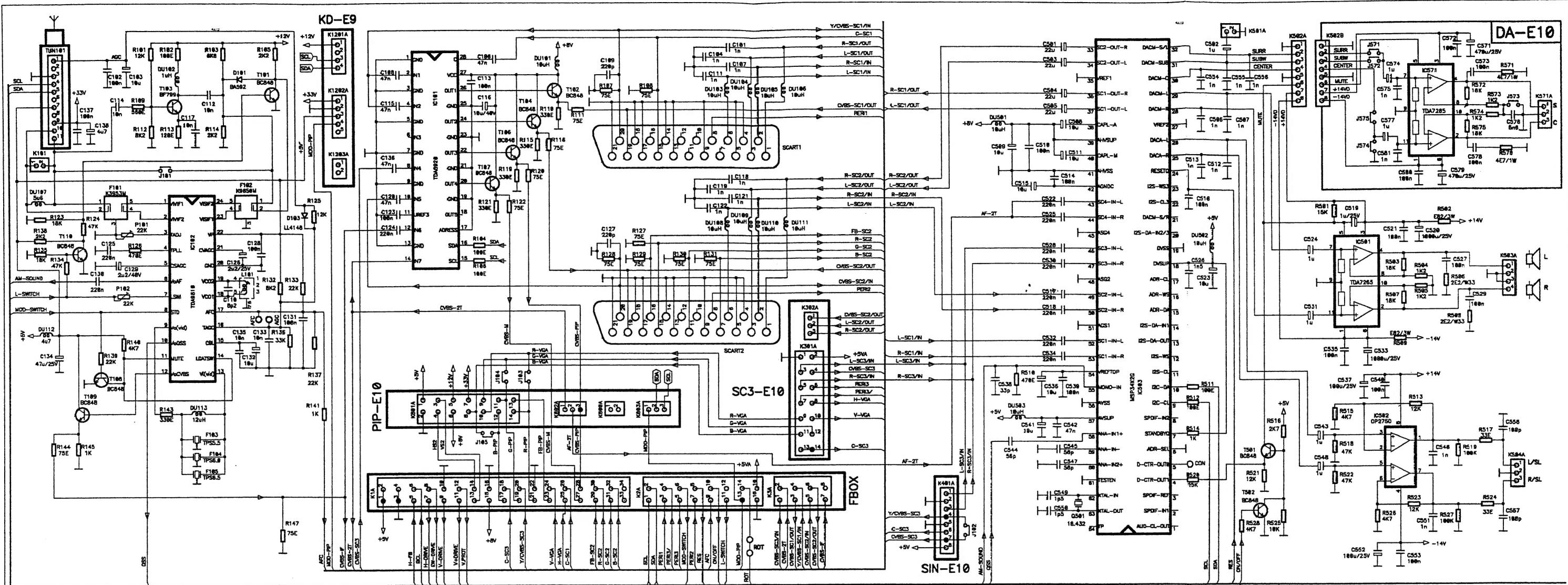


Delta, 70cm, Virt Dolby, silber, PH  
Q: 441967 / 521.937-3

1...5..9	KZ	Ident.Nr.	Bezeichnung	Stk	Pos. im Bild	Herstell.Code
1	G		FARBFERNSEHGERÄT	1		521.937-3
2	T		-- TEILE LT. EXPLOS. ZEICHNUNG --	1		441967
3	E	2825543	FERNBEDIENUNG PR 106/1 SI	1	1	444425
3	E	1116581	IR FENSTER	1	2	427205
3	E		BEDIENTEILKLAPPE SI	1	3	446889
3	E	1116573	TASTE FÜR NETZSCHALTER	1	4	427204
3	E		MODUL SFTLA-E9/10 SE 10504	1	5	446028
3	E		MODUL S1-IN SE 10708	1	6	446514
3	E	2689586	SCHALTER (NETZ)	1	7	438101
3	E		GEHÄUSE 28" DELTA SI	1	8	441220
3	E	0904177	LAUTSPRECHER 8 OHM 15 W	2	9	420717
3	E		BILDRÖHRE A 66 EAK	1	10	441289
3	E		ENTMAGNETISIERUNGSSPULE 28"	1	11	445812
3	E		HAUPTCHASSIS 10 P/B STV P2	1	12	443412
3	E		MODUL FBOX2 SE 10441	1	13	446961
3	E		MODUL PIP E10 SE10402	1	14	444883,441075
3	E		MODUL KD-E9/10 SE 10705	1	15	446092,439529
3	E		BILDRÖHRENPLATTE VK-E10 SE 10602	1	16	444156
3	E		RÜCKWAND 28" DELTA SI	1	17	446394







	28"	29"	28" 16:9	32" 16:9
C785	18n/1KV6	11n/1KV6		
R734	1E2/1W	1E5/1W		
TR781	B10-277	B10-385	B10-277	B10-384
R232	3E9 + E47	3E9 + E47		

